

CHAPTER 11

DESIGN GOALS

The purpose of the information in Chapters 11 through 14 is to provide engineers, designers, technicians, inspectors, and others with a reference to City of Redmond's goals and standards for the planning and design of clearing and grading activities and stormwater management facilities.

The following general design goals (in this Chapter and in Chapter 13) are applied to clearing, grading, and stormwater system designs in Redmond. General design goals are broad targets that indicate desirable outcomes, even though they may not be fully met in specific situations. Failure to completely meet a general design goal (e.g., minimize erosion and sedimentation) is not intended to constitute a deficiency subject to legal or procedural challenge. The goal must, however, be reasonably addressed in specific situations. If an alternate approach to a project's stormwater management design would provide a significantly greater achievement of a goal without significant additional cost (monetary, land use, etc.) then the alternative could be considered an alternative that is reasonable and could be required under this chapter. Specific situations can only be evaluated on a case-by-case basis.

General Design Goals

In Redmond, clearing, grading, and stormwater management work should be done in a manner that reasonably addresses the following general design goals:

- A. Provide a Basic System of Drainage -- One that: serves all lots and site improvements that are part of or affected by the project; directs runoff off of and away from buildings, traveled ways, and other developed surfaces; and provides water quality management where appropriate. Basic systems protect walkways, crosswalks, etc., from concentrated runoff flows (for example, by adding catch basins upslope of the walkways). (See also Chapter 2.)
- B. Prevent Flooding of Inhabited Buildings -- Overflow and emergency runoff routes must be provided. Floodways adjacent to defined channels should accommodate flood flows (to at least the 100-year storm from fully developed upstream conditions).
- C. Minimize Erosion and Sedimentation -- Consider both on-site and downstream locations; many detention criteria are based on protecting streams from scour as well as from flooding.
- D. Minimize Water Quality Degradation -- Much of the newer code is focused on water quality, an evolving field that needs sound engineering applications.
- E. Protect Water-Related Habitat -- Refer to the Sensitive Area Code Requirements (contained in the Redmond Community Development Guide).
- F. Maintain Recharge and Subsurface Flow Patterns -- Maintaining groundwater supplies is important but do not increase recharge over natural conditions without careful hydrogeologic

studies to avoid land stability problems. In areas of existing land stability concerns recharge should be reduced. Water quality is critical for recharge areas.

- G. Address "Real-World" Conditions -- Engineering designs should recognize that field conditions, debris, and poor maintenance/repair practices exist which need to be considered so long-term viability is possible. Maintenance access and guidelines should be included with designs.
- H. Provide for Operation and Maintenance -- Elements of the system proposed need to be capable of operating in the municipal context, have good access for maintenance and operation, and need to avoid very specialized parts, equipment, and operator qualifications whenever possible.
- I. Proceed Based on Clear, Professional Thinking -- Engineering documents submitted for approval must have clear concepts (including a narrative description if concepts are non-standard or not obvious) and design explanations, calculations, and other supporting information to show that the construction drawings implement the concepts.
- J. Meet Standards -- Designs need to: (1) comply with City regulations and standards; (2) comply with accepted legal principles; (3) apply sound engineering principles; and (4) include alternatives or adjustments to enhance aesthetics.

CHAPTER 12

DETAILED DESIGN STANDARDS

Detailed design standards below are specific directions related to various project elements. All project elements shall comply with these standards unless specifically authorized otherwise.

Grading

Show existing and proposed lay of the land. Medium Projects can show runoff flow arrows, approximate slopes, and spot elevations as a minimum. Large Projects shall provide contours. Contours must use the City of Redmond datum. The contour interval shall be based on the slope of the land. The contour interval is 2 foot or 5 foot; 1-foot intervals may be used if required by or approved by the Stormwater Engineer. For very flat sites spot elevations shall be provided. If part of the site is flat, provide a combination of contours and spot elevations.

Infiltration Systems

Closed infiltration systems shall have water quality pre-treatment of at least the water quality storm (and all water directed to such systems, if located in Wellhead Protection Zone 1 or 2). Pretreatment will depend on the uses and activities in the contributing area. All design flows entering an infiltration system must have pretreatment (any variations must be approved by the Stormwater Engineer). Open-pond type infiltration systems may use aquitards as defined in the 2001 Ecology Manual on the condition that excellent access is provided for equipment to periodically replace such filter material.

Biofilters

Biofiltration swales sized for the water quality storm shall not be used to convey larger storms unless they are designed for such larger storms. Biofilter design for larger storms shall be based on a maximum velocity of four feet per second. The size and shape of biofilters (and other surface features) need to be compatible with the terrain and not detract from the landscape value (the latter as determined by the Technical Committee). Biofiltration swale liners are required unless the underlying soil is determined by a geotechnical engineer to be impermeable. Biofilters with slopes under 2% should be planted with wetland vegetation. If grass cover is used, the biofilter shall have an underdrain.

At least one side of each biofilter must be accessible for maintenance by a backhoe.

Ponds

Ponds shall have impervious bottoms and sides up to the stage of the 100-year event.

Pond control structures shall be accessible by a Vactor truck, and a backhoe must be able to access each pond for maintenance. Trees must be setback one (1) vertical foot above the

maximum storage elevation to provide maintenance access and liner protection. Trees shall not be planted over a geomembrane on the pond bank.

The detention pond emergency overflow route must be independent from the primary outflow system.

Shear gates are not allowed on control structures.

Storm pipes should discharge into wet ponds at/or above the normal control stage. Designs that include pipes discharging below the control elevation must include an analysis demonstrating that sediment will not accumulate within the pipe.

To avoid anaerobic conditions, wet ponds should not have permanent pool depths greater than 8 feet, unless aeration is provided.

Generally, fences are not required around ponds with maximum bank slopes of 3 to 1.

Flow Splitter

Flow Splitters should be designed so that only the water quality design storm flow rate is directed to the water quality facility. During more intense storms, the increased hydraulic head should not cause more than a 10 percent rise in flow to the water quality facility.

Pond Lining

All detention and/or water quality ponds shall be lined to prevent infiltration. Lining may consist of an impermeable till layer 18 inches or thicker, bentonite or synthetic liners approved by the Stormwater Engineer. When a geomembrane is used, provide an analysis demonstrating that the required cover soil will be stable against sliding when saturated.

Setbacks

The tops and the toes of cut and fill slopes shall be set back from property boundaries as far as necessary for safety of the site and of adjacent properties and for the prevention of damage resulting from water runoff or erosion of the slopes. The tops and the toes of cut and fill slopes shall be set back from structures as far as is necessary for adequacy of foundation support and to prevent damage as a result of water runoff or erosion of the slopes. The City may require geotechnical/engineering reports from the applicant and may require the applicant to pay for the City's costs for obtaining a peer review of any slope stability situations and setbacks from slopes.

Vault setbacks from property lines or right-of-way limits must be a minimum of 10 feet, or the distance required to excavate a 1:1 slope from the bottom of the vault to the ground surface at the right-of-way or property line – whichever is greater.

Runoff Locations

Runoff from upslope properties must be accepted at natural and established locations at property boundaries and be discharged at natural or established downslope locations along property boundaries or to a constructed drainage system if authorized, subject to required on-site quantity and quality controls.

Ground Slope

The maximum ground slope on graded surfaces is 3 horizontal to 1 vertical (3:1) except as approved in association with roadway section in City rights-of-way where the maximum ground slope may be up to 2:1.

Standard Notes

Include the Standard Notes as shown in Appendix A-3 in all plan sets. The plans should not include the Standard Notes found in “Standard Specifications and Details” covering stormwater or erosion control. The plans should not include the detail drawings found in “Standard Specifications and Details,” simply reference the detail drawing numbers. Each sheet should include the following note: THIS DEVELOPMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF REDMOND STANDARD SPECIFICATIONS AND DETAILS, LATEST EDITION.

Horizontal Clearance and Crossing Angle

The minimum horizontal spacing between closed storm drains and water mains, gas mains, other underground utility facilities, and all structures shall be five feet (5') horizontally. The minimum horizontal distance between any open storm drainage facilities (swales, open channels, biofiltration swales, etc.) and water mains, gas mains, and other underground facilities shall be 10 feet.

For pipe crossings, the preferred angle is 90 degrees, but 20 degrees obtuse or acute of 90 degrees is acceptable.

Vertical Clearance - Utilities

The minimum vertical clearance spacing between the outside of storm drain pipelines and other pipelines/cables/conduits of other utility facilities, except sanitary sewers, shall be 12 inches. For sanitary sewers, the vertical clearance shall be 18 inches, with the storm drain above the sanitary sewer.

Sleeves are required on storm pipes when sewer is above storm with less than 18 inches vertical separation. If storm is above sewer with under 12 inches of separation, the storm pipe shall be sleeved and a foam pad is required.

Minimum Cover

The standard minimum cover over storm drainage lines is dependent on the pipe material. The Redmond Design Standards and Specifications outline cover requirements. The minimum cover over yard drain lines is 18 inches.

Easements

Where public storm drain line easements are necessary, they shall be 20 feet in width. Easement widths of less than 20 feet may be considered by the Stormwater Engineer, in special situations, but shall not be less than 15 feet in width.

Publicly maintained biofiltration swales and detention systems shall be located in tracts dedicated to the City. The size of the tract shall be based on the size of the stormwater facility. At a minimum, the tract shall include the entire facility, site access area, and at least 5 feet around the facility. In limited cases an easement may be permitted. If an easement is permitted, dimensions shall be determined by the Stormwater Engineer.

In cases where pipes and/or other facilities are deeper than 8 feet or have other special conditions, larger tracts or easements may be required.

All easements needed for City stormwater systems shall be provided by the developer in the name of the City. The required easements shall be shown on the construction drawings and the easement legal description or plat markup shall be submitted for review at the same time construction drawings are submitted for review.

Easements shall be prepared on City of Redmond Standard Forms.

An alternative to separately recording a standard easement form is to record an easement on the face of a plat. If this is the method used, a standard City of Redmond easement statement shall be included in the plat documents.

Buildings, structures, garages, carports, dumpster enclosures, decks, rockeries over 4 feet, etc., shall not be located in easement areas.

Fire Hydrants near Detention Systems

Public detention systems shall (and private systems should) have a fire hydrant located within 100 feet of the control structure for maintenance.

Trees

Trees shall not be located within 8 feet horizontally from storm drain pipe unless root barriers are provided as approved by the Stormwater Engineer. Trees may be as close as 2 feet from concrete vaults provided the trees do not interfere with access for maintenance.

Unstable Soils

Unstable soil conditions, such as peat, shall be removed from under pipes unless special measures are approved by the Stormwater Engineer.

Rockerries/Retaining Walls

Rockerries or retaining walls should not cross or be near storm-drain pipes. Any crossing of a wall shall be perpendicular to the wall and special construction techniques including steel casings may be required.

Rockerries under 4 feet are not regulated. Rockerries over 4 feet shall only be used against cut slopes.

Rockerries and retaining walls shall have foundation drains (6 inches in diameter of approved materials) behind the wall connected to a defined conveyance system. Rockerries 48 inches and taller and retaining walls must be designed by a structural or geotechnical engineer. No retaining structure may be higher than 8 feet (unless a variance is obtained). Structural retaining walls (not rockerries) over four feet in height are reviewed and permitted by the Building Department following UBC Section 106.2.

Access Roads

Unless specifically waived by the Stormwater Engineer, all stormwater facilities shall be accessible to maintenance vehicles. If not located in or adjacent to a vehicle access way, then access by an improved roadway surface shall be provided. Materials of construction for an improved roadway surface may include asphalt concrete, cement concrete, structurally stabilized vegetated surface, crushed surfacing, or other surfacing as approved by the Stormwater Engineer. Access roads shall be designed with 35 foot inside radius on curves, with slopes less than 15% and with widths as determined by the Stormwater Engineer (but not less than 10 feet). The Stormwater Engineer may require access ways to be located in separate tracts.

Outlet Control Valves

Outlet control valves shall be detailed so as to be operable from the surface (not subject to confined space entry requirements) unless approved otherwise by the Stormwater Engineer. The specific detail for these valves depends on the type of valve and shall be subject to approval by the Stormwater Engineer. Gravity-flow draw-down systems (for ponds, vaults, etc.) shall be provided with an outlet control valve.

Maximum and Minimum Slopes

Maximum slope on storm drain lines is 20%, unless approved by the Stormwater Engineer. Minimum slope on storm drain lines is 0.25%.

Structure Requirements

1. Structure Spacing -- Structures shall be installed at a preferred maximum 350-foot spacing. A maximum 400-foot spacing may be approved by the Stormwater Engineer. Structures shall be installed at the end of all dead end mainlines and at junctions of mainlines for access.
2. Profiles -- Profiles shall be included for public streets and for easements that contain public storm drain systems. Profiles may be included for non-public areas but are not required. Profiles for the public streets and easements are to be included on the same sheet as the plan unless agreed otherwise by the Stormwater Engineer.
3. Profile Call Outs -- Structure callouts in the profile shall include structure number, stationing, type, size, and compass locations of penetrations, and shall be shown complete for each structure shown on the plans. Inlet pipe crowns shall not be lower than outlet pipe crowns unless specifically waived by the Stormwater Engineer.
4. Plan Callouts -- Structure callouts in the plan view shall include structure number, type, and size.
5. Knockouts -- Knockouts shall be provided in structures where future extensions are anticipated. These shall be shown on the plans.
6. Drop Structures -- Drop structures shall only be allowed where approved by the Stormwater Engineer. Generally, drop structures will not be approved if the drop is less than 5 feet.
7. Maximum Depth -- The maximum depth of a structure without special, detailed design shall be 25 feet.
8. Through Curb Inlet Frames -- Through curb inlet frames shall be specified on plans at sag points, at any inlet where by-passing runoff would escape the intended control system and at every third inlet on a continuous run along a continuous slope. Through curb inlet frames may be used at all points except at proposed or likely driveway locations.
9. Grates -- Vaned grates shall be used on all slopes over five percent and on all public systems. Herringbone grates may be used on flatter slopes in private systems. All grates are to be ductile iron.

Single Family Roof and Foundation Drain Requirements

1. Size and Connection -- Roof drain/foundation drain connection from the house shall be 6-inch diameter and shall be extended to a storm drain structure (not connected directly to a storm drain pipe). Foundation drains shall be separate from roof drains around the building foundation. Pipes shall be smooth wall, rigid type (sewer grade). Pipes shall not be corrugated polyethylene (such as flexible ADS). Roof and footing drain connection stubs shall be at least one (1) foot below the lowest existing elevation of the building envelope on all newly-created lots, unless a different elevation is approved or required by the Stormwater

Engineer. For subdivisions, no more than three (3) roof drain stubs are allowed on a single roof drain collection pipe.

2. Building Footings -- Building footings shall be designed, or pipe located, such that the footing shall not bear on the pipe.
3. Rockerries/Retaining Walls -- Rockeries or retaining walls shall not cross or be near roof drains. Exceptions shall only be approved by the Stormwater Engineer. Any crossing of a wall shall be generally perpendicular to the wall and special construction techniques including steel casings shall be required.

Erosion Control Requirements

The applicant shall show on the construction drawings all pertinent information within 50 feet of disturbed areas.

Contours

Proposed contours must not create undrained, ponding areas where such areas would not be appropriate (onsite or offsite).

Contours of the same elevation beside each other must have high or low-spot elevations between them.

Inlet and outfall inverts must make sense with grading contours.

Swales

Grading of swales must be shown. If contours are not closer together than 50 feet, spot elevations every 50 feet are required. Also, spot elevations are required at the beginning and end of the swale.

As-built Drawings

Before acceptance of improvements an as-built plan shall be prepared by a Professional Land Surveyor or Civil Engineer, licensed in the State of Washington. The as-built plan is to include accurate locations, elevations, and sizes of all constructed features. As-built documents will bear the signature, stamp, and date of the licensed Land Surveyor preparing them. Contact the Public Works Development Services Division for detailed, current requirements.

Check Specific Project Requirements

Make sure proposed construction meets the commitments and requirements in project documents such as SEPA Checklists (EIS, if done for the project), site plan approvals, special permits, and other such project documents.

Include Basic Information Regarding the Project

The lead sheet (at a minimum) should identify the property (tax lot, address, vicinity map) and summarize information required to compute monthly stormwater fee [include total square feet of tax lot(s) comprising the project, square feet of proposed impervious area, water quantity control design storm(s), and water quality facilities with the design storm for each facility].

CHAPTER 13

KEY POINTS FOR CONSTRUCTION PHASE POLLUTION PREVENTION PLANS

The 2001 Ecology Manual provides detailed guidance regarding the plans for stormwater runoff management during construction. That guidance is to be followed in the City of Redmond. Field adjustments, likely to be required as the project construction progresses, must also be consistent with the Stormwater Technical Notebook and the 2001 Ecology Manual.

The following are key points to address when formulating a Stormwater Pollution Prevention Plan (SWPPP) in Redmond:

1. Consider Stormwater Pollution Prevention (SWPP) in the “Bigger Picture” of the project.
 - A. Plan the use of the site or adjust critical parts of the site plan (in Sensitive Areas, for example) to avoid potential issues and problems. As noted in the Rainy-Season Guidelines (Chapter 15 of this document), certain areas may not be disturbed in the Rainy Season. See also 2001 Ecology Manual Volume II, page 3-3.
 - B. Avoid Rainy-Season work, especially on large and/or weather-sensitive sites. The Rainy-Season Guidelines (Chapter 15 of this document) may show that work can be done in the rainy season but enhanced (and more costly) SWPP Plans are typically required.
2. Include a list of Key Contacts on the SWPPP.

Key Contacts related to preparation, implementation, and operation of the SWPPP are to be included on a plan sheet. For each person include the name, title, role in preparing the plan, and phone number(s). The types of people involved in preparing the plan will typically vary depending on the complexity of the project. For relatively small, straightforward projects, the Key Contact may be just the project’s civil engineer. For complex sites and projects the list could include:

- Project’s Civil Engineer
- Project’s lead SWPPP specialist
- Applicant’s Project Manager
- General Contractor
- Grading Contractor

3. Include the construction Start-up Sequence on the SWPPP.

The construction start-up sequence is a list of actions to be followed, in the order presented, to set up the stormwater pollution prevention measures prior to other construction.

Initial work in the field needs to follow the sequence on the approved plan, with adjustments to fit field conditions that are approved, in advance, by the City Inspector.

4. Delineate Clearing Limits.

Clearing limits show the area(s) of the site to be left undisturbed. Staging and stockpile areas are considered to be disturbed so they need to be included as cleared area(s). In all cases, disturbed areas shall be the minimum necessary for construction.

On the SWPPP, show the Clearing Limits. If there are key dimensions to use in the field for locating the clearing limits, show the dimensions on the plan. Such dimensions involve buffers, setbacks, geotechnical considerations, and other such factors.

5. Include “Disconnection” of Surface Inflows.

Runoff from areas upslope of the project’s disturbed area(s) must be managed so the upslope runoff does not mix with the disturbed area.

The basic approach is to: cut off the approaching runoff using lined trenches or barriers (that are erosion-proof); collect that runoff at one or more points (depending on topography and other site circumstances); and convey the water around (or across) the work area (in erosion-proof ditches and/or temporary pipes).

6. Apply all available measures to surface runoff leaving the disturbed area to meet water quality standards.

Water quality standards include the State Standards and the City Standards. City Standards include the following:

- A. At the outflow point(s) from the treatment system(s), the turbidity standard is 50 NTU, maximum. NTU = Nephelometric Turbidity Unit.
- B. At downstream points of discharge to surface waters, the standard is as follows: runoff from the site is not to cause the turbidity level in the receiving water(s) to increase more than 5 NTU.
- C. At the outflow point(s) from the site, the standard for pH is 6.5, minimum, and 8.5, maximum.
- D. If runoff from the site is permitted to be discharged into the sanitary sewer system, the runoff shall meet City and King County/Metro Standards, which include (but are not limited to) the following:

All available measures can include, but are necessarily limited to, project phasing, advanced erosion and sediment control measures, and delaying all or part of the project if work is occurring or will occur in the rainy season.

Unless a larger design storm is specified for a specific project or pollution control method, the minimum design storm for construction phase measures is the 10-year return frequency storm.

7. Surface runoff leaving the disturbed area must apply all available measures to meet water quantity limits where sensitive downstream conveyance situations exist.
 - A. For discharge(s) to streams or erodable channels, the standards for construction phase discharge are the same as those specified for permanent stormwater management for the project.
 - B. For discharges to the sanitary sewer (a back-up option requiring specific approval from the City and King County/Metro), discharge quantity is limited to that which would be allocated to the completed project using the City's standard sewer-system design criteria.
8. The SWPPP must include provisions for other pollutants that are likely to be present on site during construction.

The SWPPP must: list other potential pollutants that are likely to be present on site and provide basic instructions for their management and control; list materials and equipment to be onsite to implement the instructions; and list key emergency phone numbers for resource agencies involved in pollution incidents.

The 2001 Ecology Manual provides additional information about potential problem areas (Volume II, Chapter 4).

9. Include provisions to prevent mud and dirt from being tracked onto off-site streets in the SWPPP.

The minimum basic provision for controlling mud and dirt is the temporary quarry spall entry/exit pad. This approach is successful only in limited circumstances.

A more reliable approach (which may be proposed or required by the City) is a wheel-wash station. At a minimum (unless specifically waived by the City) the SWPPP must show the standard wheel-wash facility (including site location and related "plumbing") as an optional measure. The City may stipulate that this measure is required. The City Inspector may require immediate implementation of an optional wheel wash if off-site streets become muddy or dirty from the project. Also see 2001 Ecology Manual Volume II, Chapter 4, pages 4-8 through 4-12.

10. Include a Minimum Inspection and Maintenance Schedule for all management practices included on the plan.

The Minimum Inspection and Maintenance Schedule is to be a table or matrix listing the management practices on the left and the inspection and maintenance frequencies across the top. Two types of frequencies need to be specified. One type is the minimum time-related frequency (e.g. once per day, once per week, beginning and end of each work day, etc.) The other type is the event-related frequency (e.g. after each rainfall, after each larger storm rainfall, after each windstorm, etc.).

11. Comply with other federal, state, and city laws and regulations that relate to the construction phase.

Of primary importance under this title is safety. Safety of the project workers and other personnel, City staff, the neighbors, and other people who could be affected by the work is of paramount concern. The SWPPP should be reviewed by the plan's designers with safety in mind. Extra features (e.g. fencing, signs, walkways, etc.) should be considered.

Other laws and regulations that typically apply include:

- A. Noise standards (City)
- B. Construction work hours (City)
- C. Dust control (City and the Clean Air Agency)
- D. Rainy-Season Guidelines (City)
- E. A Pre-Construction Meeting with the City prior to starting work (City)

12. Post required Performance Securities prior to starting work.

The performance securities that are required for a specific project are specified either in the approval conditions for the project or in the requirements for permits that are required for the project.

CHAPTER 14

CONTENTS OF CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

The 2001 Ecology Manual requires a Construction Stormwater Pollution Prevention Plan (SWPPP) for Medium and Large Projects. A copy of the SWPPP is to be submitted to the City of Redmond. Unless otherwise required by the Department of Ecology, the SWPPP shall use the outline shown in Table 14-1 as the table of contents and the SWPPP shall follow that outline.

Table 14-1

Stormwater Pollution Prevention Plan (SWPPP)

Outline

1. Project Name
2. Project address or location
3. Developer or Owner
 - a. Name
 - b. Address
 - c. Phone Number
 - d. E-mail
4. Impervious area on the site prior to the proposed development.
5. Information about proposed development:
 - e. Type of project (choose one):
 - i. Single Family house on an existing lot
 - ii. Short Plat (generally nine (9) or fewer lots)
 - iii. Full Plat
 - iv. Multi-family
 - v. Commercial/Industrial
 - vi. Clearing/Grading only
 - vii. Other (describe)
 - f. Area of new and replaced impervious surface (in square feet)
 - g. Area of land disturbance (in square feet)
 - h. Area of native vegetation that will be converted to lawn or landscaped areas (in square feet)
 - i. Area of native vegetation that will be converted to pasture, if applicable (in acres)

6. Identification of Minimum Requirements (1 through 10) from the 2001 Ecology Manual that apply to the project. List the numbers that apply to the proposed project.
7. Identification of project size as classified in Redmond (Small, Medium, or Large) as defined in the Introduction within this document.

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CHAPTER 15

GENERAL STANDARDS FOR RAINY-SEASON CLEARING / GRADING

These standards are adopted per Redmond's Community Development Guide 20E.90.10-0201(2). These general standards identify what development projects in the City of Redmond can undertake site construction work in the rainy season, what level of Temporary Erosion and Sediment Control (TESC) is necessary and what runoff monitoring is required. Since these are general standards, specific projects and sites may warrant exceptions to these standards.

The "Rainy Season" means the period of time starting October 1 of each year and ending April 30 of each following year. These dates may be adjusted by the Public Works Director based on climatic conditions during a particular year.

The "Permit Processing Implications" section presents important information for those who may be pursuing construction work in the rainy season. As noted, planning for rainy-season work needs to begin early in a project. Even the SEPA documents may need to include specific information to allow state-of-the-art TESC that would be required for many sites. It is important to plan ahead if rainy-season work is to occur given that:

- The TESC Plan approved for good weather will probably not be adequate for the rainy season.
- A Seasonal Suspension Plan will be required for rainy-season work.
- TESC3 and TESC4 Levels require City meetings as these plans are formulated (advance scheduling with City staff is important).
- The TESC4 Level can involve chemical treatment, so the possible use of such measures must be part of SEPA documents. If such measures become necessary for a project and were not included in SEPA reviews, then SEPA processes would need to be amended prior to approval of the special TESC measures.
- State Department of Ecology approval is required for some state-of-the-art TESC.

Clearing/grading work must also comply with provisions in the Stormwater Technical Notebook and other applicable regulations and standards. Project work must also comply with City regulations and with requirements developed through SEPA (State Environmental Policy Act) processes, through the City's site plan review processes, and through other project reviews. These project-specific requirements are in addition to and take priority over the general standards in this document where differences occur.

The rest of this chapter contains eight (8) sections:

1. **Definitions**. This section presents definitions for a few key terms used in this document.
2. **TESC Standards**. This section presents the standards that define what constitutes successful Temporary Erosion and Sediment Control for a project.

3. **Special Requirements for Rainy-Season Work.** This section describes two special requirements that apply to rainy-season project work: the Seasonal Suspension Plan and additional performance security.
4. **Rough Grading Permits.** This section briefly identifies a permit that allows clearing and grading to get started under certain circumstances, so that such work does not occur in the rainy season.
5. **Explanation of the Rainy-Season Clearing/Grading Matrix.** This section discusses the elements of the “Matrix” (Table 2).
6. **How to Use the Rainy-Season Clearing/Grading Matrix.** This section describes the steps to follow to use the Matrix.
7. **Project Processing Implications.** This section outlines the project review and approval implications related to rainy-season work. This section contains information to request an exception to the general standards presented in the Matrix.
8. **Wet Weather Committee; Correction Requests and Appeals.** This section describes the group of City staff that have reviewed these general standards and that considers the Correction Requests and Appeals. This group is called the Wet Weather Committee.

There are four (4) tables in this document:

Table 15-1 Hydrologic Groups for Area Soils

Table 15-2 Rainy-Season Clearing/Grading Matrix (This table consists of five (5) pages)

Table 15-3 TESC Requirements

Table 15-4 Monitoring Requirements

1. **DEFINITIONS**

The term “**clearing**,” as used in these General Standards means the removal of timber, brush, grass, ground cover or other vegetative matter from a site which exposes the earth’s surface or any actions which disturb the existing ground surface.

The term “**grading**” means any action that changes the elevation of the ground surface. Grading includes, but is not limited to, dredging, landfills, excavations, filling, earthwork, and embankments.

The letters “**NTU**” stand for Nephelometric Turbidity Units. These units are a quantitative measure of water clarity based on the scattering of a standard beam of light directed into a standard sample of the water when the scattering is measured at right angle to the beam. A higher reading means the sample is less clear (more cloudy). See also the definition for “**turbidity**” included below.

The term “**potential hydraulic influence**” means surface runoff from the project would follow an identifiable conveyance route to a surface water or regulated wetland and would not be infiltrated enroute.

The term “**rainy season**” means the period of time starting on October 1 of each year and ending April 30 of each following year. These dates may be adjusted by the Public Works Director based on climatic conditions for a particular year.

The term “**turbidity**” as related to construction runoff is the visual cloudiness of the runoff especially as caused by suspended solids and settle-able solids that are being carried by the runoff. In these standards, turbidity shall be measured as specified in Method 2130B (page 2-8) of the following reference:

Standard Methods for the Examination of Water and Wastewater. Current Edition. Franson, Mary Ann H., Managing Editor. Clesceri, Lenore S; Greenberg, Arnold E; and Eaton, Andrew D editorial board. Published jointly by the American Public Health Association, the American Water Works Association, and the Water Environment Federation.

The term “**turbidity meter**” means a portable, electric, hand-held measuring devise designed to give a numerical value of the turbidity (cloudiness) of a sample of water. The numerical valves are expressed in units known as Nephelometric Turbidity Units (NTUs).

2. TESC STANDARDS

Successful TESC will meet all the following standards:

- A. Site areas which do not need to be disturbed are not disturbed (clearing limits are defined and maintained).
- B. Flows of runoff from areas not under construction are kept off of disturbed soils in the construction areas.
- C. Disturbed soil in an area that is not being worked receives temporary cover.
- D. The turbidity in runoff from the construction area does not exceed 50 NTU.
- E. Run-off from the construction area that reaches receiving waters does not cause the turbidity in the receiving waters to increase more than 5 NTU as a result of the project runoff.
- F. Disturbed areas receive final, permanent cover in accordance with the approved project plans without unnecessary delay.
- G. Off-site streets are kept free of dirt and mud originating from the construction site. (Using sweeping, not flushing, in the streets and, if appropriate, on-site wheel wash facilities.)
- H. Dust is controlled and is in compliance with the Puget Sound Clean Air Agency.

- I. Contingency plans for controlling spills and other potential pollutants have been developed and are ready to implement at the construction site.
- J. Work in Sensitive Areas conforms to requirements of the City's Sensitive Areas Ordinance (SAO). See Redmond Community Development Guide for additional information and definitions regarding Sensitive Areas.
- K. 24-hour, 7-day-per-week point(s) of contact is/are designated who can call out and direct crews, obtain materials, and authorize immediate expenditures for on-site temporary erosion and sediment control (TESC) work.
- L. Compliance exists with all project approval conditions and permits (including applicable non-City permits such as, but not necessarily limited to, the Hydraulics Project Approval from Washington State Fish and Game Department and the NPDES Permit).

3. SPECIAL REQUIREMENTS FOR RAINY-SEASON WORK

There are two special requirements that apply specifically to rainy-season clearing and grading:

- A. Project must have a City-approved Seasonal Suspension Plan for suspending work until the end of the rainy season if on-site TESC is found to be inadequate.

A Seasonal Suspension Plan is a separate outline on the TESC plan that describes how the site is closed for the duration of the rainy season if directed by the City. Sites may be closed if they cannot meet the criteria for successful TESC outlined in Section 2. The Seasonal Suspension Plan must have sufficient detail to clearly define the work to be performed under this plan if it is implemented.

The Seasonal Suspension Plan can include measures in the TESC Plan and /or additional BMPs. No site work is allowed under the Seasonal Suspension Plan in the rainy season except for work that is necessary to implement the measures in the TESC Plan and the Seasonal Suspension Plan.

- B. Performance security must be provided in a manner acceptable to the City. Performance security will need to provide for monitoring (Level M2 minimum; discussed later in these General Standards), operation of TESC measures, implementation of the Seasonal Suspension Plan, and site restoration.

4. ROUGH GRADING PERMITS

Note that a separate permit for clearing and grading may be issued in certain circumstances when such action could allow substantial clearing and grading work to be completed before the rainy season begins. This permit is called a "Rough Grading Permit." Rough Grading Permits cannot be issued until:

- A. SEPA (if required) is completed for the entire project.

- B. Site Plan (or equal) for the project is approved.
- C. All major project feasibility issues have been resolved (including execution of any off-site easements).
- D. Conceptual utility drawings are acceptable.
- E. Construction plans for Grading (or Rough Grading), TESC, and, for the rainy season, the Seasonal Suspension Plan are approved.
- F. Site restoration is feasible (replanting of mature forested areas and restoring existing topographic character after extensive cuts or fills are examples of work that makes restoration infeasible).
- G. Acceptable performance security is posted.

5. EXPLANATION OF THE RAIN-SEASON CLEARING/GRADING MATRIX

Four factors are considered to classify sites and set standards for clearing and grading work during the rainy season:

- A. Location of work areas as related to surface waters (streams and lakes) or wetlands and the buffers of these Sensitive Areas.
- B. The slope of the land surface in the work areas. In some instances the direction of the slope relative to nearby surface waters or wetlands is also a factor.
- C. The actual soils in the work area expressed as Soil Conservation Service (SCS) Soil Hydrologic Groups designations (A, B, C, or D).
- D. Amount of land that is disturbed, considering both the cleared area and volume of earth to be moved.

Location(s) of Work Area(s)

For purposes of these General Standards, the entire City of Redmond is classified into five (5) types of work areas.

Class 1 Work Areas: areas within the banks of a stream, in a lake, in a regulated wetland or on steep slopes (equal to or over 40 percent).

Class 2 Work Areas: areas that are the buffers of streams, lakes, regulated wetlands, or steep slopes.

Class 3 Work Areas: areas within the current conditions 100-year frequency floodplains of major streams or lakes but outside the buffers of the stream or lake (the Sammamish River, Bear Creek, Evans Creek, and Lake Sammamish).

Class 4 Work Areas: areas that have “potential hydraulic influence” on a stream, lake, or regulated wetland (See definitions section regarding this term).

Class 5 Work Areas: consist of all other areas not included in any of the previous four (4) areas.

Work areas are further defined and sub-divided in Table 15-2.

Slope of the Land Surface

This factor refers to the general slope of the land in and immediately adjacent to a work area. The slope used in these General Standards generally refers to the steepest gradient before work or during work, prior to final cover.

Slopes are considered in categories as shown in Table 15-2. The percent of slope is the vertical rise divided by the horizontal run between two points on the ground surface (measured in the steepest direction) multiplied by 100.

Soil(s)

This document is based on soil hydrologic groups as defined by the United States Soil Conservation Service (SCS):

- Group A. (Low runoff potential). Soils having high infiltration rates even when thoroughly wetted. These consist chiefly of deep, well-to-excessively drained sands or gravels. These soils have a high rate of water transmission in that water readily passes through them.
- Group B. Soils having moderate infiltration rates when thoroughly wetted. These consist chiefly of moderately deep-to-deep, moderately well-to-well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.
- Group C. Soils having slow infiltration rates when thoroughly wetted. These consist chiefly of soils with a layer that impedes downward movement of water or soils with moderately fine-to-fine texture. These soils have a slow rate of water transmission.
- Group D. (High runoff potential). Soils having very slow infiltration rates when thoroughly wetted. These consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

Group A soils have high infiltration capacity in their natural locations because they are associated with permeable underlying geology. In these guidelines, a work area is considered to have Group A soils only if the underlying geology is highly permeable (to a depth of at least 6 feet below the elevation of the lowest project excavation) and only Group A material used in any filling.

A site's soil types must be determined by a qualified Professional Engineer based on field observations, borings, and test pits at the site. For reference, Table 15-1 in these General Standards shows hydrologic groups for various soils found in the SCS Soil Survey for King County.

Amount of Land Disturbed

The area disturbed is measured in acres and includes all land area that will be cleared at any one time. An area is considered cleared or disturbed until it has the final permanent cover as shown in approved project plans.

Permanent cover can include: final landscaping; buildings (at least to pad or first floor stage); and walkways, parking, and roadways (at least to first lift of compacted gravel sub-base or equal).

For some projects, project phasing can be part of the TESC Plan so the amount of land disturbed at any one time is reduced (see Table 15-2 to determine how disturbed area can affect requirements for a site).

The volume of material to be moved on a site is also a factor in setting standards. The volume of material to be moved is measured in cubic yards, independent of site area.

6. HOW TO USE TABLE 15-2, THE RAINY-SEASON CLEARING/GRADING MATRIX

Table 15-2 classifies sites, determines if clearing/grading work can occur in the rainy season, determines the level of TESC required, and determines the level of monitoring required. Table 15-3 defines the four (4) levels of TESC shown in Table 15-2. Table 15-4 defines the three (3) levels of monitoring shown in Table 15-2.

To use Table 15-2, it is recommended that this document be reviewed to understand site factors and other issues related to rainy-season work. For specific projects, start with the first page of Table 15-2. If any part of the proposed rainy-season work area is in a Class 1 area, then the entire rainy-season work area must comply with requirements for the Class 1 area.

If none of the proposed rainy-season work area is in a Class 1 area, do the same review using the second page of Table 15-2. Continue through the table until the proposed rainy-season work area is shown in the table. That point in the table defines the class for the proposed work.

Once the work area class is found Table 15-2 shows whether or not work can be undertaken in the rainy season and if so, what levels of TESC and monitoring are required.

Temporary Erosion and Sediment Control (TESC) Levels

Table 15-2 requires different levels of TESC for different site circumstances. The TESC Levels are defined in Table 15-3. Level TESC1 is the most basic level and Level TESC4 is to be used

in critical or sensitive situations. The levels of TESC effort shown in Table 15-3 specify the nature of the TESC Plan and:

- The expertise involved in preparation of the TESC Plan.
- The expertise and experience of the TESC implementation team (during project construction).

Moving large volumes of earth is also a factor in determining the TESC Level required. If rainy-season work involves large quantities of earthwork (over 10,000 cubic yards, as a general threshold), then Level TESC3 is the minimum required.

As experience is obtained by the City concerning TESC3 and TESC4 levels, additional guidance will be added to this document.

Monitoring Requirements

Table 15-2 requires different levels of monitoring for different site circumstances. The three (3) levels of monitoring are defined in Table 15-4. The monitoring relates to inspection of the TESC measures and to monitoring of site runoff and receiving waters for turbidity levels. Portable, electronic turbidity meters are required TESC tools for Contractors working in this area.

If monitoring or other inspections lead to a determination that the TESC measures are not adequate to meet the standards outlined in Section 2, the City may stop work on the entire project and issue further direction. The developer must take actions that are necessary (subject to City approval) to meet the TESC criteria listed in Section 2. Such actions may include compliance with the approved TESC Plan, preparation of an improved TESC plan, suspension of work during the rainy season, or other actions depending on the situation.

7. PROJECT PLANNING IMPLICATIONS

These standards are intended to protect surface and ground water quality and fisheries resources during construction and keep streets in the vicinity of construction sites safe, free of dirt and mud.

Almost all construction sites have the potential to adversely affect water quality and the safety of nearby streets. Such potential greatly increases in the rainy season. It is this increased potential that led to formulation of these general standards for rainy-season work.

The best general strategies to avoid the risks associated with rainy-season work are:

Strategy One: Plan projects so that major, if not all, site work is done in the dry season.

Strategy Two: Plan projects so the site work is phased, if rainy-season work is to be pursued. Work phasing can be applied in two ways as related to these general standards.

First, if part of the site is in an area where work would not generally be allowed during the rainy season, a proposed rainy-season work plan might exclude the site work that cannot be constructed in the rainy season.

Second, project phasing may be used as a general strategy to reduce the area of bare earth exposed at any one time during the rainy season. Such project phasing can reduce costs and land area required for the more complex TESC measures. This approach can reduce the scope and costs (including bonding) for implementation of the Seasonal Suspension Plan.

Even with phasing, some work areas pose such a risk to water quality and fisheries resources that they are not suitable for rainy-season work. These standards identify such work areas.

These standards also identify work areas that pose a high risk but one that can be reduced by using exceptional temporary erosion and sediment control (TESC) measures. Further guidance is provided in this document.

Even lower risk sites need to carefully plan and implement TESC measures in the rainy season.

If rainy-season site work is being contemplated, the project applicant should consider the following questions:

General Project Planning Stage

- A. The City has significant limitations and conditions regarding clearing and grading work in the rainy season. Is there any way that this project can be scheduled to conduct all clearing and grading activities in the dry weather? This will expedite permitting and reduce the cost of erosion control measures during construction.
- B. Can work avoid Sensitive Areas altogether? A project that avoids or at least minimizes work in Sensitive Areas also avoids or minimizes permitting issues related to Sensitive Areas.
- C. Can work be phased? This strategy is discussed above.

Preliminary Design and Application Stage

- A. If site work is allowed in the rainy season under these general standards, what levels of TESC and Monitoring will be required (See Tables 15-2, 15-3, and 15-4).
- B. If state-of-the-art TESC4 is required, what notifications need to be included in the SEPA documents to allow such TESC options to be used?

Note: If chemical treatment options for TESC may be required, this option must be included in the SEPA Environment Checklist (or EIS) for the project. It is possible to amend a SEPA determination at a later date to add the chemical treatment options but initial disclosure is preferable and saves time for the applicant.

- C. Are appropriate TESC planning and implementation team members and those with monitoring expertise being brought into the design process?

Note: For sites and projects requiring only TESC1 or TESC2 levels, the specialized expertise of the team may be less critical. For TESC3 and TESC4 levels, the composition, knowledge, and experience of the team will be a major consideration in allowing rainy-season work. See Table 15-3 for requirements regarding team participants.

- D. Is adequate scheduling, including lead times, being included to involve the City staff in TESC issues?

Note: The TESC1 and TESC2 levels require a minimum of City staff involvement in addition to normal project review activities. However, TESC3 and TESC4 require additional review by City staff. Joint meetings will likely be needed. As the rainy season approaches in each year, demands for City staff time can increase to the point where scheduling involves significant lead time. Please plan ahead if rainy-season work is a possibility.

Project Approval Stage

As part of the City's initial, written preliminary approval for a project, the Rainy-Season Classification will be included.

The City's classification may be appealed based on specific issues of fact or the project's context. Appeals may be submitted only after the written preliminary project approval is issued. Appeals are submitted as described in Section 8.

Construction Documents Stage

As construction documents are being developed, it is imperative to apply the expertise of appropriate team members. For most sites, rainy-season TESC will involve significant costs. The TESC measures and their costs are an inherent part of rainy-season work. The design team needs to produce high-quality TESC plans for projects to proceed in the rainy season.

Pre-Construction Stage

The main interaction with the City in this stage is the Pre-Construction Meeting. This meeting needs to include members of the TESC and Monitoring planning and implementation team including contractors and sub-contractors. The contractor doing the clearing and grading work must attend.

If appropriate parties are not represented at the Pre-Construction Meeting, the City may cancel that meeting and require it to be rescheduled.

Construction Stage

The construction stage is the critical stage. It is the responsibility of the developer to meet the standards outlined in Section 2 of these guidelines. (If the approved plan is not sufficient, the developer must take actions to propose and, after approval by the City, implement additional measures.)

It is the TESC standards not just the measures on the approved plan that must be achieved.

If TESC (including monitoring) is not being successfully addressed, the City may take action ranging from “Notices of Correction” to “Stop Work Orders” that apply to the whole project including all trades and activities. The Stop Work Order can apply for the entire rainy-season duration and can require implementation of the Seasonal Suspension Plan.

The construction stage does not end under these general guidelines until all disturbed earth surfaces are covered with the final, permanent cover as shown on approved project plans.

8. APPEALS: THE WET WEATHER COMMITTEE

After the City has issued the initial written approval or disapproval for a project (which will include the classification of the site and project under these general standards) an appeal may be made based on issues of fact and/or the project’s context.

Appeals are to be submitted to the Development Services Division and will be considered by the Wet Weather Committee. The Wet Weather Committee is composed of one representative from each of the following divisions of the Public Works Department:

- Construction Division
- Development Services Division
- Natural Resources Division

Appeals must be in writing (five copies) and must include clearly organized supporting data developed by well-qualified professionals for all key points.

Upon reviewing written appeals, the Wet Weather Committee may take one of six (6) actions:

- Determine that inadequate or insufficient information has been provided or that information was not developed by appropriate, well-qualified professionals. (The appeal will be returned without action and additional details may or may not be included.)
- Approve the appeal.
- Approve the appeal with conditions.
- Deny the appeal.
- Deny the appeal but include information that could be addressed so as to warrant reconsideration.
- Request additional information.

For sites that require an NPDES from the State Department of Ecology, initial review(s) of appeals maybe made by the Wet Weather Committee but final approval for rainy-season work will require submittal of a copy of the State-approved SWPPP.

For sites that require an HPA from the State Department of Fish and Game, a copy of the State-approved HPA must be submitted with an appeal to the Wet Weather Committee.

Table 15-1
Hydrologic Groups for Area Soils*

SCS Symbol	SCS Soil Name	SCS Hydrologic Group
Ag	Alderwood gravelly sandy loam	C
Be	Beausite gravelly sandy loam	B
Bh	Bellingham silt loam	C
Br	Briscot silt loam	B
Bu	Buckley silt loam	B/C
Ea	Earlmont silt loam	B/C
Ed	Edgewick fine sandy loam	B
Ev	Everett gravelly sandy loam	B
In	Indianola loamy fine sand	A
Kp	Kitsap silt loam	C
Ks	Klaus gravelly loamy sand	A
Ne	Neilton very gravelly loamy sand	A
Ng	Newberg silt loam	B
Nk	Nooksack silt loam	B
No	Norma sandy loam	B
Or	Orcas Peat	D
Os	Oridia silt loam	C
Ov	Ovall gravelly loam	C
Pc	Pilchuck loamy fine sand	A
Pu	Puget silty clay loam	C
Py	Puyallup fine sandy loam	B
Ra	Ragnar fine sandy loam	B

*Compiled from Soil Conservation Service information that applies to King County.

Table 15-2
Rainy-Season Clearing / Grading Matrix¹
Work Located in Sensitive Areas

<u>Area Class²</u>	<u>Description³</u>	<u>Surface Slope</u>	<u>Soil Group</u>	<u>Work in Rainy Season, General Guidance (Guidance may be modified or waived during City-designated emergencies)</u>
1a	<ul style="list-style-type: none"> • Within the Ordinary High Water mark of a stream (all stream classes) • Within a lake • Within a regulated wetland (all wetland classes) • On steep slopes (equal to or greater than 40 percent) 	All	All	No work in rainy season

¹ Decisions for a specific project regarding work in the rainy season may be appealed to the Public Works Department's "Wet Weather Committee." Contact the Engineering Division for details. For TESC Levels and Monitoring Levels see Tables 3 and 4, respectively.

² "Area Classes" are labels used to identify sub-parts of a project site that meet the descriptions presented in this table.

³ See Redmond's Sensitive Areas Ordinance (20D.140 of the Redmond Community Development Guide) for additional definitions and information regarding streams, lakes, wetlands, and buffers. "Artificially Created Wetlands" as mitigation to maintain wetland resources are to be treated as closest wetland type.

Table 15-2 - Continued
Rainy-Season Clearing / Grading Matrix
Work Located in Sensitive Area Buffer

<u>Area Class</u>	<u>Description</u>	<u>Surface Slope</u>	<u>Soil Group</u>	<u>Work in Rainy Season, General Guidance (Guidance may be modified or waived during City-designated emergencies)</u>
2a	<u>Buffers associated with:</u> <ul style="list-style-type: none"> • Class I Streams • Class II Streams where native fish are present or could be present during the construction time • All classes of regulated wetlands • The area within 25 feet of Lake Sammamish Ordinary High Water (elevation 27, City Datum) • The area within 15 feet of steep slopes (those equal to or greater than 40 percent) 	All slopes less than 40 percent	All	No work in rainy season
2b	<u>Buffers associated with:</u> <ul style="list-style-type: none"> • Class II Streams not included in 2a above • Class III Streams • The area within 5 feet of Class IV Streams 	Ground slopes away from stream (at slope of at least 5 percent at all times before, during, and after project construction) or work area is isolated from stream by dike or equal; slopes less than 40 percent	All	Work Possible if: <ul style="list-style-type: none"> • TESC3 or TESC4 Plan (as directed by City); M3 monitoring • Separation of work from 100-year stream flows • Restoration/mitigation and performance assurances are approved by City
2c		All other ground slopes less than 40 percent	All	No work in rainy season

Table 15-2 – Continued
Rainy-Season Clearing / Grading Matrix
Work Located in a Major Floodplain (Outside Buffers)

<u>Area Class</u>	<u>Description</u>	<u>Surface Slope</u>	<u>Soil Group</u>	<u>Work in Rainy Season, General Guidance (Guidance may be modified or waived during City-designated emergencies)</u>
3a	Within the current 100-year <u>FEMA Floodplain</u> but outside of stream buffers and wetland buffers (all stream classes, and wetland types)	Ground slopes away from stream (at slope of at least 5 percent at all times before, during and after project construction) or work area is isolated from stream by dike or equal; slopes less than 40 percent	All	Work Possible if: <ul style="list-style-type: none"> • TESC3 Plan minimum; M3 monitoring • Separation of work from 100-year stream flows • Restoration/mitigation and performance assurance are approved by City
3b		All other ground slopes less than 40 percent	All	No Work in rainy season (unless the work area has been isolated from current 100-year frequency flood flows)

Table 15-2 – Continued
Rainy-Season Clearing / Grading Matrix
Work Located in “Hydraulic Influencing” Areas

<u>Area Class</u>	<u>Description</u>	<u>Surface Slope</u>	<u>Soil Group</u>	<u>Work in Rainy Season, General Guidance (Guidance may be modified or waived during City-designated emergencies)</u>
4a	<u>Potential hydraulic influence</u> ; ⁴ disturbed area for entire project is less than ¼ acre	All slopes less than 40 percent	A	Work possible with: • TESC1 • M1 monitoring
4b			All other soils (B, C, and D)	Work possible with: • TESC2 • M1 monitoring
4c	<u>Potential hydraulic influence</u> ; two or more phases used so maximum disturbed area does not exceed ¼ acre at any one time	All slopes less than 40 percent	A	Work possible with: • TESC3 • M1 monitoring
4d			All other soils (B, C, and D)	Work possible with: • TESC3 • M2 monitoring
4e	<u>Potential hydraulic influence</u> ; disturbed area(s) over ¼ acre	All slopes less than 40 percent	A	Work possible with: • TESC3 • M2 monitoring
4f			All other soils (B, C, and D)	Work possible with: • TESC3 minimum; TESC4 approved and ready to implement at site • M3 monitoring

⁴ Potential Hydraulic Influence means surface runoff from the site would follow an identifiable conveyance route to a surface water or regulated wetland and would not be infiltrated enroute.

Disturbed areas less than ¼ acre typically include:

- Trenching/backfill operations
- Berm construction/cover work
- Small sites, including single family homes
- Large sites where work can be phased so as to create only a small disturbed area at any one time.

TESC Plans for disturbed areas in Area Classification 4a, 4b, 4c, and 4d must provide methods to cover all disturbed areas and temporarily cease work during rainfall.

Table 15-2 – Continued
Rainy-Season Clearing / Grading Matrix
Work Located in Other Areas

<u>Area Class</u>	<u>Description</u>	<u>Surface Slope</u>	<u>Soil Group</u>	<u>Work in Rainy Season, General Guidance (Guidance may be modified or waived during City-designated emergencies)</u>
5a	Areas not included in previous types with disturbed area of 1 acre or less	0-10% slope	All	Work possible if: <ul style="list-style-type: none"> • TESC2 plan minimum; M1 monitoring
5b		Slopes over 10%, but less than 40%	All	<ul style="list-style-type: none"> • TESC2 plan minimum; M2 monitoring
5c	Areas not included in previous types with disturbed area over 1 acre	0-10% slope	Group A Soils	Work possible if: <ul style="list-style-type: none"> • TESC2 plan minimum; M1 monitoring
5d			Group B, C, or D Soils	<ul style="list-style-type: none"> • TESC3 plan minimum; M2 monitoring
5e		Slopes over 10%, but less than 40%	All	<ul style="list-style-type: none"> • TESC3 minimum; TESC4 approved and ready to implement at site; M2 monitoring

Table 15-3
TESC Requirements⁵

TESC Level Number	Recommended Participants in TESC Plan	TESC Plan General Formulation and Features (Note: Seasonal Suspension Plan required for all TESC Levels)	TESC Implementation Team (during construction)
TESC1	<ul style="list-style-type: none"> Applicant's Engineer 	Focus is on standard, common BMPs for site and project type. General sequencing list required.	Designated contractor or sub-contractor ⁶
TESC2	<ul style="list-style-type: none"> Applicant's Engineer Applicant's Project Manager Designated Contractor or Sub-Contractor for TESC⁶ 	Focus is still on standard BMPs. Written summary required outlining how TESC is to be addressed through main construction phases. More detailed sequencing info on plan.	Designated contractor or sub-contractor with documented experience ⁷
TESC3	<ul style="list-style-type: none"> Applicant's TESC Engineer(s) Applicant's Project Manager General Contractor Designated Contractor or Sub Contractor⁶ for TESC Grading Contractor City's Stormwater Engineer City's Construction Inspector 	Plan content similar to Level TESC2, above. More attention to all aspects of plan from conceptual to practical considerations included by team during plan formulation so as assure successful TESC.	Designated contractor or sub-contractor(s) ⁶ with Level TESC3 experience ⁷
TESC4	<p>Same as Level TESC3 plus:</p> <ul style="list-style-type: none"> Representative from City's Natural Resources Division 	Same as Level TESC3 but will include state-of-art stormwater treatment systems, currently including chemical/filtration systems and such systems as "electrofloc".	Designated contractor(s) or sub-contractor(s) with Level TESC4 experience ⁷

⁵ Projects moving over 10,000 cubic yards of earth require TESC3 or TESC4.

⁶ Designated 24-hour, 7-day-per-week contact list is required.

⁷ TESC Contractor must document prior experience in TESC at level designated. For Level 4, TESC Contractor must document experience in chemical treatment and latest mechanical TESC methods (even if they are not initially included in TESC Plan).

Table 15-4
Monitoring Requirements⁸

Monitoring Level	Turbidity Monitoring ⁹		
	Monitoring to be by	Monitoring What and When	Frequency ¹⁰
M1	<ul style="list-style-type: none"> Contractor or sub-contractor acceptable to City 	<ul style="list-style-type: none"> Monitoring of surface runoff whenever it is leaving the work area 	<ul style="list-style-type: none"> Frequency and details as directed by City; adjusted as project proceeds
M2	<ul style="list-style-type: none"> City-approved contractor Supplemental verification, if directed by City, by third party to be approved by City and hired by Developer 	<ul style="list-style-type: none"> Monitoring of surface runoff whenever it is leaving the work area Monitoring of receiving waters (if applicable) if and when directed by City 	<ul style="list-style-type: none"> Surface runoff to be monitored at least twice per day Receiving waters to be monitored immediately after surface runoff monitoring
M3	<ul style="list-style-type: none"> Monitoring to be done by City-approved “third party” hired by Developer If so specified, monitoring shall be done by “third party” hired by City and paid for by Developer’s advance deposit of funds 	<ul style="list-style-type: none"> Monitoring of surface runoff whenever it is leaving the work area Monitoring of receiving waters whenever surface runoff is leaving site and is reaching the receiving waters 	

⁸ For all three (3) Monitoring Levels, the minimum inspection frequency of all of the TESC measures shall be:

- After each day of site work (but not less than 3 times per week even if no site work has occurred)
- After each storm
- Twice per day during storms; more frequently if directed by City

⁹ TESC Contractor must have portable, electronic turbidity meter. At all monitoring levels, a log is to be kept on-site by the TESC Contractor showing monitoring dates, times, locations, weather conditions, estimated discharge rates, monitoring readings, name(s) of those doing the monitoring and equipment used.

¹⁰ Frequencies listed are minimum frequencies. More frequent monitoring including continuous monitoring during heavy storms may be required.